Dell Inc. PowerEdge C6520 (Intel Xeon Silver 4316, 2.30 GHz)

<table>
<thead>
<tr>
<th>Software</th>
<th>OS: Red Hat Enterprise Linux 8.2 (Ootpa) 4.18.0-193.el8.x86_64</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compiler: C/C++: Version 2021.1 of Intel oneAPI DPC++/C++ Compiler Build 20201113 for Linux; Fortran: Version 2021.1 of Intel Fortran Compiler Classic Build 20201112 for Linux; C/C++: Version 2021.1 of Intel C/C++ Compiler Classic Build 20201112 for Linux</td>
<td></td>
</tr>
<tr>
<td>Parallel: Yes</td>
<td></td>
</tr>
<tr>
<td>Firmware: Version 1.1.3 released Apr-2021</td>
<td></td>
</tr>
<tr>
<td>File System: tmpfs</td>
<td></td>
</tr>
<tr>
<td>System State: Run level 3 (multi-user)</td>
<td></td>
</tr>
<tr>
<td>Base Pointers: 64-bit</td>
<td></td>
</tr>
<tr>
<td>Peak Pointers: 64-bit</td>
<td></td>
</tr>
<tr>
<td>Other: jemalloc memory allocator V5.0.1</td>
<td></td>
</tr>
<tr>
<td>Power Management: BIOS and OS set to prefer performance at the cost of additional power usage.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hardware</th>
<th>CPU Name: Intel Xeon Silver 4316</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max MHz: 3400</td>
<td></td>
</tr>
<tr>
<td>Nominal: 2300</td>
<td></td>
</tr>
<tr>
<td>Enabled: 40 cores, 2 chips</td>
<td></td>
</tr>
<tr>
<td>Orderable: 1.2 chips</td>
<td></td>
</tr>
<tr>
<td>Cache L1: 32 KB I + 48 KB D on chip per core</td>
<td></td>
</tr>
<tr>
<td>L2: 1.25 MB I+D on chip per core</td>
<td></td>
</tr>
<tr>
<td>L3: 30 MB I+D on chip per core</td>
<td></td>
</tr>
<tr>
<td>Other: None</td>
<td></td>
</tr>
<tr>
<td>Memory: 1 TB (16 x 64 GB 2Rx4 PC4-3200AA-R, running at 2666)</td>
<td></td>
</tr>
<tr>
<td>Storage: 125 GB on tmpfs</td>
<td></td>
</tr>
<tr>
<td>Other: None</td>
<td></td>
</tr>
</tbody>
</table>

| SPECspeed®2017_fp_base = 154 |
| SPECspeed®2017_fp_peak = 157 |

| Test Sponsor: Dell Inc. |
| Tested by: Dell Inc. |
| Test Date: May-2021 |
| Hardware Availability: Apr-2021 |
| Software Availability: Dec-2020 |

### SPECspeed®2017 Floating Point Speed Result

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>603.bwaves_s</td>
<td>40</td>
</tr>
<tr>
<td>607.cactuBSSN_s</td>
<td>40</td>
</tr>
<tr>
<td>619.ibm_s</td>
<td>40</td>
</tr>
<tr>
<td>621.wrf_s</td>
<td>40</td>
</tr>
<tr>
<td>627.cam4_s</td>
<td>40</td>
</tr>
<tr>
<td>628.pop2_s</td>
<td>40</td>
</tr>
<tr>
<td>638.imagick_s</td>
<td>40</td>
</tr>
<tr>
<td>644.nab_s</td>
<td>40</td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
<td>40</td>
</tr>
<tr>
<td>654.roms_s</td>
<td>40</td>
</tr>
</tbody>
</table>

### Test Details

- **CPU2017 License:** 55
- **Test Date:** May-2021
- **Test Sponsor:** Dell Inc.
- **Hardware Availability:** Apr-2021
- **Tested by:** Dell Inc.
- **Software Availability:** Dec-2020

### Benchmark Details

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>603.bwaves_s</td>
<td>40</td>
<td>191</td>
</tr>
<tr>
<td>607.cactuBSSN_s</td>
<td>40</td>
<td>111</td>
</tr>
<tr>
<td>619.ibm_s</td>
<td>40</td>
<td>137</td>
</tr>
<tr>
<td>621.wrf_s</td>
<td>40</td>
<td>143</td>
</tr>
<tr>
<td>627.cam4_s</td>
<td>40</td>
<td>107</td>
</tr>
<tr>
<td>628.pop2_s</td>
<td>40</td>
<td>78.4</td>
</tr>
<tr>
<td>638.imagick_s</td>
<td>40</td>
<td>131</td>
</tr>
<tr>
<td>644.nab_s</td>
<td>40</td>
<td>264</td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
<td>40</td>
<td>101</td>
</tr>
<tr>
<td>654.roms_s</td>
<td>40</td>
<td>159</td>
</tr>
</tbody>
</table>
Dell Inc.

PowerEdge C6520 (Intel Xeon Silver 4316, 2.30 GHz)

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>603.bwaves_s</td>
<td>40</td>
<td>102</td>
<td>577</td>
<td>103</td>
<td>572</td>
<td>103</td>
<td>573</td>
</tr>
<tr>
<td>607.cactuBSSN_s</td>
<td>40</td>
<td>86.7</td>
<td>192</td>
<td>87.2</td>
<td>191</td>
<td>86.7</td>
<td>192</td>
</tr>
<tr>
<td>619.lbm_s</td>
<td>40</td>
<td>47.1</td>
<td>111</td>
<td>45.3</td>
<td>116</td>
<td>47.1</td>
<td>111</td>
</tr>
<tr>
<td>621.wrf_s</td>
<td>40</td>
<td>95.3</td>
<td>139</td>
<td>96.9</td>
<td>137</td>
<td>89.6</td>
<td>148</td>
</tr>
<tr>
<td>627.cam4_s</td>
<td>40</td>
<td>82.3</td>
<td>108</td>
<td>82.7</td>
<td>107</td>
<td>82.3</td>
<td>108</td>
</tr>
<tr>
<td>628.pop2_s</td>
<td>40</td>
<td>152</td>
<td>78.4</td>
<td>151</td>
<td>78.8</td>
<td>152</td>
<td>78.4</td>
</tr>
<tr>
<td>638.imagick_s</td>
<td>40</td>
<td>110</td>
<td>131</td>
<td>110</td>
<td>131</td>
<td>110</td>
<td>131</td>
</tr>
<tr>
<td>644.nab_s</td>
<td>40</td>
<td>66.2</td>
<td>264</td>
<td>66.2</td>
<td>264</td>
<td>58.8</td>
<td>297</td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
<td>40</td>
<td>90.6</td>
<td>101</td>
<td>89.8</td>
<td>101</td>
<td>90.6</td>
<td>101</td>
</tr>
<tr>
<td>654.roms_s</td>
<td>40</td>
<td>98.8</td>
<td>159</td>
<td>96.9</td>
<td>163</td>
<td>98.8</td>
<td>159</td>
</tr>
</tbody>
</table>

SPECspeed®2017_fp_base = 154
SPECspeed®2017_fp_peak = 157

Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

Environment Variables Notes

Environment variables set by runcpu before the start of the run:
KMP_AFFINITY = "granularity=fine,compact"
LD_LIBRARY_PATH = "/mnt/ramdisk/cpu2017-1.1.7-ic2021.1/lib/intel64:/mnt/ramdisk/cpu2017-1.1.7-ic2021.1/je5.0.1-64"
MALLOC_CONF = "retain:true"
OMP_STACKSIZE = "192M"

General Notes

Binaries compiled on a system with 1x Intel Core i9-7980XE CPU + 64GB RAM memory using Redhat Enterprise Linux 8.0

NA: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown) is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5753 (Spectre variant 1) is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5715 (Spectre variant 2) is mitigated in the system as tested and documented.

Transparent Huge Pages enabled by default
Prior to runcpu invocation

(Continued on next page)
Dell Inc. PowerEdge C6520 (Intel Xeon Silver 4316, 2.30 GHz) SPECCPU®2017_fp_base = 154

<table>
<thead>
<tr>
<th>SPECspeed®2017_fp_peak = 157</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dell Inc.</td>
</tr>
<tr>
<td>SPECspeed</td>
</tr>
</tbody>
</table>

CPU2017 License: 55
Test Sponsor: Dell Inc.
Tested by: Dell Inc.
Test Date: May-2021
Hardware Availability: Apr-2021
Software Availability: Dec-2020

General Notes (Continued)

Filesystem page cache synced and cleared with:
sync; echo 3>>/proc/sys/vm/drop_caches
jemalloc, a general purpose malloc implementation
built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5

Benchmark run from a 125 GB ramdisk created with the cmd: "mount -t tmpfs -o size=125G tmpfs /mnt/ramdisk"

Platform Notes

BIOS Settings:
- Logical Processor: Disabled
- Virtualization Technology: Disabled
- System Profile: Custom
- CPU Power Management: Maximum Performance
- C1E: Disabled
- C States: Autonomous
- Memory Patrol Scrub: Disabled
- Energy Efficiency Policy: Performance
- CPU Interconnect Bus Link
- Power Management: Disabled

Sysinfo program /mnt/ramdisk/cpu2017-1.1.7-ic2021.1/bin/sysinfo
Rev: re538 of 2020-09-24 e8664e66d2d7080afeaa89d4b38e2f1c
running on localhost.localdomain Fri May 21 00:27:43 2021

SUT (System Under Test) info as seen by some common utilities.
For more information on this section, see https://www.spec.org/cpu2017/Docs/config.html#sysinfo

From /proc/cpuinfo
- model name: Intel(R) Xeon(R) Silver 4316 CPU @ 2.30GHz
  2 "physical id"s (chips)
  40 "processors"
- cores, siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)
  cpu cores: 20
  siblings: 20
  physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19
  physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19

From lscpu:
- Architecture: x86_64
- CPU op-mode(s): 32-bit, 64-bit

(Continued on next page)
Dell Inc.  

PowerEdge C6520 (Intel Xeon Silver 4316, 2.30 GHz)  

SPECspeed®2017_fp_base = 154  
SPECspeed®2017_fp_peak = 157

CPU2017 License: 55  
Test Sponsor: Dell Inc.  
Test Date: May-2021  
Hardware Availability: Apr-2021  
Tested by: Dell Inc.  
Software Availability: Dec-2020

Platform Notes (Continued)

Byte Order: Little Endian  
CPU(s): 40  
On-line CPU(s) list: 0-39  
Thread(s) per core: 1  
Core(s) per socket: 20  
Socket(s): 2  
NUMA node(s): 2  
Vendor ID: GenuineIntel  
CPU family: 6  
Model: 106  
Model name: Intel(R) Xeon(R) Silver 4316 CPU @ 2.30GHz  
Stepping: 6  
CPU MHz: 1819.428  
BogoMIPS: 4600.00  
Virtualization: VT-x  
L1d cache: 48K  
L1i cache: 32K  
L2 cache: 1280K  
L3 cache: 30720K  
NUMA node0 CPU(s): 0-19  
NUMA node1 CPU(s): 20-39  
Flags: fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdcisol rdtscp lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc cpuid aperfmperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16 xtpr pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault epb cat_l3 invpcid_single ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erts invpcid rtm cqm rdt_a avx512f avx512dq rspeed edx smap avx512ifma clflushopt clwb intel_pt avx512cd sha ni avx512bw avx512vl xsaveopt xsavec xsaves cqm_llc cqm_occup_llc cqm_mbb_total cqm_mbb_local wbinvd dtcrobe idate arat pln pts avx512vmbmi umip kpu ospke avx512_vbmi2 gfi vaes vpclmulqdq avx512_vnni avx512_bit agility tme avx512_vpopcntdq la57 rdpid md_clear pconfig flush_l1d arch_capabilities

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a physical chip.  
available: 2 nodes (0-1)  
node 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19  
node 0 size: 515458 MB  
node 0 free: 505623 MB  
node 1 cpus: 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39  
node 1 size: 516088 MB  
node 1 free: 509527 MB

(Continued on next page)
Platform Notes (Continued)

node distances:

node   0   1
  0:  10  20
  1:  20  10

From /proc/meminfo
MemTotal:       1056303836 kB
HugePages_Total:       0
Hugepagesize:       2048 kB

/sbin/tuned-adm active
Current active profile: throughput-performance

From /etc/*release* /etc/*version*

os-release:
NAME="Red Hat Enterprise Linux"
VERSION="8.2 (Ootpa)"
ID="rhel"
ID_LIKE="fedora"
VERSION_ID="8.2"
PLATFORM_ID="platform:el8"
PRETTY_NAME="Red Hat Enterprise Linux 8.2 (Ootpa)"
ANSI_COLOR="0;31"
redhat-release: Red Hat Enterprise Linux release 8.2 (Ootpa)
system-release: Red Hat Enterprise Linux release 8.2 (Ootpa)
system-release-cpe: cpe:/o:redhat:enterprise_linux:8.2:ga

uname -a:
Linux localhost.localdomain 4.18.0-193.el8.x86_64 #1 SMP Fri Mar 27 14:35:58 UTC 2020
x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:

CVE-2018-12207 (iTLB Multihit): Not affected
CVE-2018-3620 (L1 Terminal Fault): Not affected
Microarchitectural Data Sampling: Not affected
CVE-2017-5754 (Meltdown): Not affected
CVE-2018-3639 (Speculative Store Bypass): Mitigation: Speculative Store Bypass disabled via prctl and seccomp
CVE-2017-5753 (Spectre variant 1): Mitigation: usercopy/swapgs barriers and __user pointer sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling
CVE-2020-0543 (Special Register Buffer Data Sampling): No status reported
CVE-2019-11135 (TSX Asynchronous Abort): Not affected

(Continued on next page)
Dell Inc.

PowerEdge C6520 (Intel Xeon Silver 4316, 2.30 GHz)

SPECspeed®2017_fp_base = 154
SPECspeed®2017_fp_peak = 157

CPU2017 License: 55
Test Sponsor: Dell Inc.
Tested by: Dell Inc.

Test Date: May-2021
Hardware Availability: Apr-2021
Software Availability: Dec-2020

Platform Notes (Continued)

run-level 3 May 20 21:39

SPEC is set to: /mnt/ramdisk/cpu2017-1.1.7-ic2021.1
Filesystem     Type   Size  Used Avail Use% Mounted on
tmpfs          tmpfs  125G   11G  115G   9% /mnt/ramdisk

From /sys/devices/virtual/dmi/id
Vendor:         Dell Inc.
Product:        PowerEdge C6520
Product Family: PowerEdge
Serial:         SDPT078

Additional information from dmidecode follows. WARNING: Use caution when you interpret
this section. The 'dmidecode' program reads system data which is "intended to allow
hardware to be accurately determined", but the intent may not be met, as there are
frequent changes to hardware, firmware, and the "DMTF SMBIOS" standard.
Memory:
  16x 00AD063200AD HMAA8GR7AJR4N-XN 64 GB 2 rank 3200, configured at 2666

BIOS:
  BIOS Vendor:   Dell Inc.
  BIOS Version:  1.1.3
  BIOS Date:     04/27/2021
  BIOS Revision: 1.1

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
C | 619.lbm_s(base, peak) 638.imagick_s(base, peak)
   644.nab_s(base)
==============================================================================
Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R)
64, Version 2021.1 Build 20201112_000000
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
==============================================================================
C | 644.nab_s(peak)
==============================================================================
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,
Version 2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

(Continued on next page)
Compiler Version Notes (Continued)

C          | 619.lbm_s(base, peak) 638.imagick_s(base, peak)  644.nab_s(base)
-------------------------
Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R)  
64, Version 2021.1 Build 20201112_000000
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

C          | 644.nab_s(peak)
-------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,  
Version 2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

C++, C, Fortran | 607.cactuBSSN_s(base, peak)
-------------------------
Intel(R) C++ Intel(R) 64 Compiler Classic for applications running on  
Intel(R) 64, Version 2021.1 Build 20201112_000000
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R)  
64, Version 2021.1 Build 20201112_000000
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on  
Intel(R) 64, Version 2021.1 Build 20201112_000000
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

Fortran     | 603.bwaves_s(base, peak) 649.fotonik3d_s(base, peak)  654.roms_s(base, peak)
-------------------------
Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on  
Intel(R) 64, Version 2021.1 Build 20201112_000000
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

Fortran, C  | 621.wrf_s(base, peak) 627.cam4_s(base, peak)  628.pop2_s(base, peak)
-------------------------
Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on  
Intel(R) 64, Version 2021.1 Build 20201112_000000

(Continued on next page)
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Compiler Version Notes (Continued)

Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------

Base Compiler Invocation

C benchmarks:
icc

Fortran benchmarks:
ifort

Benchmarks using both Fortran and C:
ifort icc

Benchmarks using Fortran, C, and C++:
icpc icc ifort

Base Portability Flags

603.bwaves_s: -DSPEC_LP64
607.cactuBSSN_s: -DSPEC_LP64
619.lbm_s: -DSPEC_LP64
621.wrf_s: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
627.cam4_s: -DSPEC_LP64 -DSPEC_CASE_FLAG
628.pop2_s: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
-assume byterecl
638.imagick_s: -DSPEC_LP64
644.nab_s: -DSPEC_LP64
649.fotonik3d_s: -DSPEC_LP64
654.roms_s: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
-m64 -std=c11 -xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp -DSPEC_OPENMP
-mbranches-within-32B-boundaries

(Continued on next page)
Dell Inc.  
PowerEdge C6520 (Intel Xeon Silver 4316, 2.30 GHz)  

| SPECspeed®2017_fp_base = 154 |
| SPECspeed®2017_fp_peak = 157 |

**CPU2017 License:** 55  
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**Hardware Availability:** Apr-2021  
**Tested by:** Dell Inc.  
**Software Availability:** Dec-2020  

---

### Base Optimization Flags (Continued)

Fortran benchmarks:
- `m64 -Wl,-z,muldefs -DSPEC_OPENMP -xCORE-AVX512 -ipo -O3`  
- `no-prec-div -qopt-prefetch -ffinite-math-only`  
- `qopt-mem-layout-trans=4 -qopenmp -nostandard-realloc-lhs`  
- `-mbranches-within-32B-boundaries -L/usr/local/jemalloc64-5.0.1/lib`  
- `-ljemalloc`

Benchmarks using both Fortran and C:
- `m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div`  
- `qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp`  
- `DSPEC_OPENMP -mbranches-within-32B-boundaries -nostandard-realloc-lhs`  
- `-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc`

Benchmarks using Fortran, C, and C++:
- `m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div`  
- `qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp`  
- `DSPEC_OPENMP -mbranches-within-32B-boundaries -nostandard-realloc-lhs`  
- `-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc`

---

### Peak Compiler Invocation

C benchmarks (except as noted below):
- `icc`
- `644.nab_s: icx`

Fortran benchmarks:
- `ifort`

Benchmarks using both Fortran and C:
- `ifort icc`

Benchmarks using Fortran, C, and C++:
- `icpc icc ifort`

---

### Peak Portability Flags

Same as Base Portability Flags
Dell Inc.

PowerEdge C6520 (Intel Xeon Silver 4316, 2.30 GHz)

**SPECspeed®2017_fp_base = 154**

**SPECspeed®2017_fp_peak = 157**

<table>
<thead>
<tr>
<th>CPU2017 License:</th>
<th>55</th>
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<tbody>
<tr>
<td>Test Sponsor:</td>
<td>Dell Inc.</td>
</tr>
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<td>Tested by:</td>
<td>Dell Inc.</td>
</tr>
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<td>Test Date:</td>
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</tbody>
</table>

**Peak Optimization Flags**

C benchmarks:

- **619.lbm_s**: `basepeak = yes`
- **638.imagick_s**: `basepeak = yes`

Fortran benchmarks:

- **603.bwaves_s**: `-m64 -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -DSPEC_SUPPRESS_OPENMP -DSPEC_OPENMP -ipo -xCORE-AVX512 -O3 -no-prec-div -qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp -nostandard-realloc-lhs -mbranches-within-32B-boundaries -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc`

- **649.fotonik3d_s**: `basepeak = yes`

- **654.roms_s**: `basepeak = yes`

Benchmarks using both Fortran and C:

- **621.wrf_s**: `-m64 -std=c11 -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX512 -O3 -no-prec-div -qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=4 -DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP -mbranches-within-32B-boundaries -nostandard-realloc-lhs -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc`

- **627.cam4_s**: `basepeak = yes`

- **628.pop2_s**: `basepeak = yes`

Benchmarks using Fortran, C, and C++:

- **607.cactuBSSN_s**: `basepeak = yes`
## SPEC CPU®2017 Floating Point Speed Result

**Dell Inc.**  
**PowerEdge C6520 (Intel Xeon Silver 4316, 2.30 GHz)**

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The flags files that were used to format this result can be browsed at:


You can also download the XML flags sources by saving the following links:


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Tested with SPEC CPU®2017 v1.1.7 on 2021-05-21 00:27:41-0400.  
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